

CLEAN VERSION OF AMENDMENTS

In the claims:

Please cancel claims 53-58.

The following is a complete listing of a clean version of the presently pending claims (note that all claims have been reproduced for the Examiner's convenience; claims amended and added hereby are so indicated by the parenthetical expressions "amended" and "new", respectively):

26. (amended) An interface device capable of allowing a user to communicate with a computer running an interactive computer application and generating a graphic image and a graphic object, the interface device comprising:

a peripheral device in communication with the computer and capable of being translated linearly in three dimensions by the user, the peripheral device comprising:

a member adapted to contact the user;

a link coupled to the member; and

a first sensor proximate the member, the first sensor sensing forces at the member, the first sensor having a servo output;

a force actuator coupled to the link, the force actuator generating forces through the link to the member; and

a second sensor coupled to the peripheral device, the second sensor detecting a position of at least a portion of the peripheral device, the second sensor comprising an encoder providing a position output to the computer to control the graphic image,

wherein the peripheral device applies a force to the user based on the interaction of the graphic image with the graphic object.

27. An interface device according to claim 26 wherein the encoder is an optical encoder.

28. An interface device according to claim 26 wherein the peripheral device is capable of being moved in six degrees of freedom.

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29. An interface device according to claim 26 further comprising a cable connected to the link for forcing the member.

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34. (amended) An interface device capable of allowing a user to communicate with a computer running an interactive computer application and generating a graphic image and a graphic object, the interface device comprising:

a peripheral device in communication with the computer and capable of being manipulated by the user, the peripheral device comprising:

a surface adapted to contact a portion of the user;

a forcing member coupled to the surface, the forcing member comprising a flexible member and a link coupled to the flexible member, the link having a joint; and

a force sensor coupled to the forcing member, the force sensor providing a force servo output to the interface device;

a position sensor coupled to the peripheral device to detect a position of at least a portion of the peripheral device to control the graphic image; and

a force activator providing a force to the forcing member, the force based on the interaction of the graphic image with the graphic object.

35. An interface device according to claim 34 wherein the flexible member is a cable.

36. An interface device according to claim 34 wherein the force activator is a motor.

37. (amended) An interface device according to claim 34 wherein the position sensor comprises an encoder.

38. (amended) An interface device capable of communicating with a computer running an interactive computer application and generating a graphic image and a graphic object, the interface device comprising:

a peripheral device in communication with the computer and capable of being manipulated by a user, the peripheral device comprising a texture actuator, the texture actuator having a plurality of texture elements; and

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a sensor coupled to the peripheral device to detect a position of at least a portion of the peripheral device to control the graphic image,

wherein one or more of the texture elements selectively contact the user based on the interaction of the graphic image with a graphic object to simulate a texture of the graphic object.
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39. An interface device according to claim 38 wherein the peripheral device is adapted to contact a finger.

40. An interface device according to claim 26 wherein the link comprises a five-bar linkage.

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41. An interface device according to claim 40 wherein one of the bars of the five-bar linkage is a grounded link.

42. An interface device according to claim 26 wherein the peripheral device is coupled to a force activator remote from the member adapted to contact a user.
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43. An interface device according to claim 29 further comprising a spring for tensioning the cable.

44. An interface device according to claim 29 wherein the link comprises a joint and wherein the cable is connected to the link on one side of the joint and further comprising a second cable connected to the link on the opposite side of the joint.

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47. An interface device according to claim 34 wherein the forcing member further comprises a second flexible member and wherein the first and second flexible members are coupled to the link on opposite sides of the joint.
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48. An interface device according to claim 47 wherein the force activator selectively applies tension to one or more of the flexible members to cause rotation of the link about the joint.

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49. An interface device according to claim 34 wherein the force activator is remote from the surface and wherein the forcing member is routed from the force activator to the surface.

50. An interface device according to claim 34 wherein the forcing member further comprises a spring for tensioning the flexible member.

51. An interface device according to claim 34 wherein the peripheral device is capable of being translated in three dimensions.

52. An interface device according to claim 34 wherein the peripheral device is capable of being moved in six degrees of freedom.
